

time lag for populations to be lost after degradation of their habitats, forest areas as large as 10,000 ha may lose many bird species within 100 years. The chapter on climate change describes the future of tropical birds as nothing if not a disaster. Their sedentary behavior and the large spatial scale of their forest habitats indicate that most birds will be unable to shift sufficiently fast or far to keep up with rising temperatures when these affect their habitats over the next few decades. Climate change also affects birds by increases in diseases, such as bird malaria, and by increasing seasonality and variability of rainfall, and in land and sea temperatures.

Errors are few; the only howler I noted was the reference (page 82) of tropical forest species with small clutch sizes, lower productivity, and longer life spans as 'r-selected' life histories (rather than 'k-selected'). The term 'r-selection' in the 1970s and 1980s, following MacArthur and Wilson's work on island biogeography, was used to describe species with a life history of rapid reproduction, and 'k-selection' to describe species with traits that promote competitive success and survival. The terms came from growth curve equations, where 'r' was an exponential factor in population growth and 'k' was the carrying capacity of the environment. The book index includes both bird species and localities. The maps, graphs and photographs are more visually compelling in the color plates than in the corresponding black and white images in the chapter texts.

The book is a useful reference on the conservation ecology of tropical birds. As many as 600 threatened bird species do not have a single published study on their biology, and there is much to be done in this field; the results may inform conservation strategies. I recommend the book to anyone with an interest in bird ecology and conservation and in birds of the tropics.—ROBERT B. PAYNE, Professor Emeritus, University of Michigan, 1306 Granger Avenue, Ann Arbor, MI 48104, USA; e-mail: rbpayne@umich.edu

#### THE BIRDS OF PANAMA: A FIELD GUIDE.

By George R. Angehr and Robert Dean. Zona Tropical/Cornell University Press, Ithaca, New York, USA. 2010: 456 pages. ISBN: 978-0-8014-7674-7. \$35.00 (paperback).—On a natural fence-row at the edge of a pasture, flitted a small yellow

bird with an orange tint to its face. A quick thumbing to the flycatcher section of Angehr and Dean's new field guide confirmed my suspected identification, Ochre-ored Flatbill ("Yellow-breasted Flycatcher" in Angehr and Dean, *Tolmomyias flaviventris*), a recent colonist from northern South America into eastern Panama. The illustration of this species on page 234 is spot on; whereas it is unmentioned, let alone illustrated, in Ridgely and Gwynne's 1989 second edition of *A Guide to the Birds of Panama* (Princeton University Press). This trip to the Darien Province of eastern Panama was my first with Angehr and Dean's new field guide, and I've been using it almost exclusively ever since.

Replacing an icon is always difficult but, in the more than 20 years since Ridgely and Gwynne, much has changed both in the printing world and in Panama. Perhaps most importantly, the cost of color printing has decreased substantially, and an entire glossy book with plates on the right side of every page-pair is economically feasible. Thus, Angehr and Dean is a 'second generation' field guide in the spirit of the iconic *National Geographic Field Guide to the Birds of North America*, sharing the conventions of the dominance of graphics over text, full-body paintings of all bird species regularly found in the region, and color-coded range maps—all in a format emphasizing portability over an exhaustive review of natural history. The result, in the case of Angehr and Dean, is one of the best examples to date of the contemporary Neotropic bird guide. Let's be clear: the zealot may wish to keep a copy of Ridgely and Gwynne in the car, hotel, or home office, but this new guide is the one book that the bird enthusiast in Panama will want to carry in the field, and also makes for the best go-to office reference for questions of currently-known distribution. This book also benefits from over two decades of additional field expeditions, both by museum ornithologists and avocational bird enthusiasts. Areas such as the Río Changuinola, Burica Peninsula, Coiba Island, Cerros Hoya and Chucantí, and the Piñas-Jaqué region are among a myriad of localities that had only been visited by one or two collecting parties at the time Ridgely and Gwynne was drafted. It is no exaggeration to say that Angehr and Dean's Panama is a quite different ornithological landscape compared to just 20 years ago.

George Angehr is the leading authority alive on the birds of Panama. Over the last decade, Angehr

has developed a reputation as a stickler for the details about Panamanian bird distributions, and this book represents the fruits of his attention to detail. Robert Dean is a gifted bird artist who balances attention to species-specific differences between closely-related taxa while depicting birds as vibrant and life-like, without resorting to the baroque. Not only do Dean's birds have depth, they are usually posed correctly for the species, which can be a significant aid in proper identification (but I am not sure I have ever seen a female Great Antshrike [*Taraba major*] on the ground, page 203). The critical part in each of Angehr's species descriptions is the text in bold, which points out key phenotypic characters or geographical restrictions for a given species. The text might stray a half dozen or so words beyond the minimum for some species, but I doubt many readers will quibble.

The range maps really drive home the biogeographic complexities of diminutive Panama, and it is easy to overlook the considerable amount of information they convey. The maps use three colors: purple for residents, blue for boreal migrants, and red for austral migrants with crosshatching used to convey a pattern of erratic visitation rather than year after year site fidelity of non-breeding visitors. This scheme *just works* and the new user quickly assimilates this scheme without having to refer to a key or guide. It is important to note the range maps are scaled, depending on how widely distributed the species is in Panama. Care was taken to make sure the reader does not get disoriented when zoomed into a small region in Panama.

One caution for the reader is that many of the range maps likely overstate the continuity of many species ranges between the extremes of their distribution. The most egregious example is the Orange-billed Sparrow (*Arremon aurantirostris*), which has been found in isolated patches of humid woodland habitats along the Pacific lowlands of Panama, but cannot be found in most of this arid and savanna-like region despite the range map on page 360. Even some published distributional gaps, such as that of the Bay Wren (*Cantorchilus* [*Thryothorus*] *nigricapillus*) east of Panama City (Gonzalez et al. 2003, *Condor*), are missing from Angehr and Dean's range maps. These details are unlikely to affect most users in the field, but could be corrected to meet the standards of excellence displayed elsewhere in the book.

Dean previously illustrated Zona Tropical/Cornell University's *The Birds of Costa Rica: a Guide* (Garrigues and Dean 2007), and many of the illustrations in the Panama guide are borrowed from that earlier effort. However, perhaps as many as a third of the widespread landbirds in Panama show racial variation between eastern and western Panama. The majority of these represent subtle differences in plumage coloration and size that would be difficult to appreciate in the field and irrelevant for a compact field guide. Perhaps one in five of these cases represents discrete differences in plumage that might confuse the traveling bird enthusiast. Dean and Angehr illustrate both eastern and western forms for several of these, such as the Bay Wren or the White-shouldered Tanager (*Tachyphonus luctuosus*). However, often only the western form is illustrated, and the form occurring in central and eastern Panama is not. A small caption next to the illustration, in many of these cases, notes that it is the western form that is illustrated, along with a verbal description of the eastern form in the text. Nonetheless, there are too many instances where no illustration exists for a variant likely deserving species-level status (the Blue-crowned Motmot complex, *Momotus* [*momota*] *coeruliceps*), for the form most likely to be observed in Panama (e.g., Ruddy Foliage-gleaner, *Automolus rubiginosus*), or both (e.g., Ochre-bellied Flycatcher, *Mionectes oleagineus*).

One final frustration with the layout is a tendency for phenotypically similar birds to be spread across multiple pages. For example, flycatchers with kiskadee-like plumages are spread across three pages in the book, while resident *Catharus* thrushes are split across two pages. Possibly I just can not let go of the 'Field Guide 1.0' mentality, but I appreciate these birds all on the same page so that my eye can quickly pick out the discriminating field marks without having to leaf back and forth. Ironically, this isn't as much of a problem in the similar, but svelter, Zona Tropical Costa Rica guide. The problem is not a lack of space on the figure pages; some figure pages have so much white space that the birds appear to be floating in mid air. Instead, the problem seems to be due to excess white space on the text page. The Panama guide has what appears to be 1.5-line spacing between species accounts whereas the Costa Rica guide uses a solid line rather than excessive white space between species descriptions and has considerably less white space

at the header and footer. To be fair, this is really only a problem for species-rich groups, namely hummingbirds and flycatchers; for nearly all other families, users won't be subject to excessive page-flipping.

We have yet to see in the Neotropics what I consider a third generation field guide, exemplified by David Sibley's *National Audubon Society: The Sibley Guide to Birds* (2000, Alfred A. Knopf). Such a guide would include male, female, and immature plumages of all subspecies and racial variants—perhaps the only effective way to draw attention to the hidden diversity obfuscated by current taxonomy of Neotropical birds. Yet one shudders to think of the size of such a book, even for a small Neotropical country such as Panama. Rumor has it that Angehr, Dean, and Zona Tropical/Cornell University are contemplating a version of the Panama field guide for tablet computers. Leapfrog development, such as skipping over the installation of landlines for cellular phone networks, is common in the developing world. I encourage the authors and publishers to stand firmly on the excellent foundation that is *The Birds of Panama: A Field Guide* and take that leap.—MATTHEW J. MILLER, Smithsonian Tropical Research Institute, Apartado Postal 0843-03092 Panamá, República de Panamá; e-mail: millerma@si.edu

SECOND ATLAS OF THE BREEDING BIRDS OF MARYLAND AND THE DISTRICT OF COLUMBIA. Edited by Walter G. Ellison. The Johns Hopkins University Press, Baltimore, Maryland, USA, 2010: 520 pages. ISBN: 978-0-8018-9576-0. \$75.00 (cloth).—Nowhere is the maturation of the modern American birding community more evident than in the current 'second wave' of bird atlasing in several U.S. states and counties, as well as in parts of Canada. Even before its first bird atlas effort was complete in 1987 (published in 1996), the Maryland Ornithological Society's Atlas Committee realized that rapid changes in the status and distribution of many bird species were occurring, and the time to begin a second effort was only a few years away. Planning for this second effort began as soon as the first had concluded, and this atlas work was conducted during 2002–2006.

The late 20th century had seen not just a tremendous boom in real estate development through much of Maryland but also substantive

changes in agricultural and land management practices, and in the quality and extent of many natural habitats. The warming climate also appeared to be having an impact on the distribution of several species in the state; others were simply vanishing for reasons unknown. With snapshots of bird distribution just 20 years apart, and with data collected at the 'neighborhood level,' associating species' distributional changes with particular factors becomes more feasible, and the minute detail of both Maryland atlas efforts certainly lends itself to a more precise understanding of bird population dynamics.

Maryland may be ideally suited to lead this second wave of American atlases in the United States. The state is relatively small but, unlike other small states such as West Virginia, and Maryland and the District of Columbia have a surfeit of birders and field ornithologists; these people are devoted both to their state and to its 23 counties, whose avifaunas they know exquisitely well. The Maryland Ornithological Society (MOS) learned a great deal from the earlier atlas work and, for the second, numerous innovations were crucial for planning, execution, and publication. MOS retained a full-time, professional atlas coordinator, Walter G. Ellison, who was also responsible for the production of the publication itself. Ellison worked with both the Atlas Committee and a set of county coordinators, who vetted data from >1,000 volunteers in the field. These volunteers and coordinators were able to submit data from their field cards directly into an on-line data base, an innovation that surely saved many thousands of hours of work, compared to atlas work of the 1980s.

Maryland's size also permitted volunteers to collect data on an even smaller scale than in other states, the 'quarter block,' measuring  $2.5 \times 2.5$  km rather than the standard  $5 \times 5$  km. This finer scale was used in counties experiencing the most drastic changes, whether because of development (Baltimore, Prince George's, Montgomery, Howard, southern Carroll) or possibly because of changing climate: mountainous Garrett County, in the far western part of the state, and marshy Somerset County, the farthest south.

The Atlas Committee also forged strong ties with agencies at the state and federal levels, which provided both funding and expertise. The Wildlife Heritage Division of the Maryland Department of Natural Resources and the Biological Resources Division of the U.S. Geological Survey at